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White paper

Choosing an enterprise fax server solution: A guide to selecting a fax server solution that supports enterprise faxing needs

Faxing has a long history as a trusted and secure form of communication and document exchange, and is deeply rooted in many business processes and workflows all around the world. Organizations turn to an enterprise fax server to boost efficiency and productivity by increasing the speed of transmitting, routing and processing faxed documents. Understanding the features and functionality of enterprise fax servers is an important step in choosing a solution that is best for each individual organization.

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Executive summary

Fax remains relevant and important to many organizations. Millions of fax documents flow in and out of companies around the world every single day. When a business operates on processes and functions that rely on fax, an enterprise fax server solution should be considered. Enterprise fax servers turn faxed documents into electronic documents that can be integrated as part of a workflow or business process. As a result, companies can increase efficiency and productivity by increasing the speed of transmitting, routing and processing faxed documents.

When organizations require a fax system be installed and managed internally, the most prevalent solution is an on-premises fax server. The primary reasons for an on-premises implementation include security and privacy issues, the need for better administrative control and data sovereignty of fax content. In addition, on-premises fax systems can integrate with other applications easily. It is primarily for these reasons that world-class organizations, regardless of industry, turn to on-premises enterprise fax server solutions to increase efficiency in transmitting, routing and processing faxed documents.

Investigating fax servers and the functionality they provide can be an overwhelming task. Fax servers have different levels of capabilities, and when fax document management is deemed a mission-critical function, choosing a fax server solution should not be undertaken lightly. Not all fax servers are created equally, and companies should actively seek a supplier with a proven history of developing reliable, enterprise-class fax server platforms.

This white paper serves as a decision support tool for organizations planning to choose and implement an on-premises, enterprise-grade fax server solution. It is designed to help evaluate business needs and develop a foundation for choosing an optimal fax server application.

Fax server basics

A fax server is a multi-tiered software application that provides a centralized fax resource for sending and receiving fax documents from anywhere on a LAN/WAN network. Fax servers work by providing a centralized network-based software application that handles both inbound and outbound faxing. Unlike a standalone fax machine, a fax server application integrates with various business workflow processes that need to send or receive fax documents in and out of an organization. End users, applications and printers communicate with the fax server, using it as a communications platform that connects to the outside world.

Core components of a fax server deployment

As mentioned previously, not all faxing systems are the same. Companies that rely on fax cannot afford to lose, misplace or have faxes not delivered/received in a timely manner. That is why overall system architecture is important when considering fax server options. Properly deployed, enterprise quality fax systems have proven to maintain extremely high degrees of system reliability because of the numerous built-in fail-safes that ultimately protect faxes from being lost, delayed or accidentally deleted.

Below is a list of the basic core components of a fax server system. Understanding these terms provides a solid foundation for evaluating fax server systems and the functionalities they provide.

Fax server software. The core set of application services that manage the entire network fax environment, including the fax database services, job handling and queuing, document conversions and the services that interface with the telephony equipment.

Fax database. An open, relational database (e.g., Microsoft® SQL Server) that manages system objects, fax metadata or can manage and track fax deliveries.

Client programs. The client-side component of the fax server, including dedicated enterprise administration software, fax client software, web-based user tools or utilities designed to appear as a local printer on the network. The most popular client integration is the email client, which is used in most enterprise fax server implementations.

Additional modules. Often provided as optional modules above and beyond the fax server's core offering, additional modules can be added for extra functionality and workflow enablement. Some possible module examples include email integration, searchable PDF conversion, PDF encryption, Optical Character Recognition, etc.

Integration modules, tools and developer APIs. These modules are developed to allow for integrations between the fax server and specific business applications. Vertical application systems are software specifically developed for healthcare, legal, financial, etc., such as SAP®, Oracle®, etc. Examples of APIs include web services, JAVA, COM and C++.

Server hardware. A dedicated server unit running the installed fax server software and application. Separate, dedicated server units may also be deployed to operate the telephony boards in some scenarios. It is also possible to deploy fax server software in a virtual environment, eliminating the need of physical server hardware.

Telephony interface equipment. A fax server can interface with telephony systems via hardware-based intelligent fax boards (IFBs) or software-based fax over IP (FoIP) middleware. Often the main fax server can have dedicated transport services that run in the background as an interface between the fax software and the telephony equipment. Alternatively, a fax server can connect to a cloud-based fax service for the transmission of the fax, bypassing onsite telephony altogether. The fax server remains on-premises while the transmission moves to the cloud, dramatically simplifying an implementation with a hybrid deployment.

Enterprise fax servers: Key capabilities to evaluate

It is also important to review the functions, features and capabilities that fax server applications can offer. The categories below outline the eight basic fundamentals of what enterprise fax servers must do to meet the rigorous demands of today's document-centric businesses.

1. **What is the business need?** The first step in evaluating enterprise fax servers is to determine the business need for a fax server within the organization. This will help evaluate the subsequent key capabilities of a fax server.
2. **Desktop, email and MFP integrations.** Enterprise faxing solutions must provide company-wide users the ability to send, receive and manage faxes from virtually all user-based desktop systems, including applications such as Microsoft® Office, any email application and MFP devices to scan and send paper documents.
3. **Production (automatic) faxing and application integrations.** Choose a fax server which can fax-enable any application that generates documents that are part of a workflow or automated business process. Back-end applications, such as CRM, ERP, EMR, EHR systems, document management and more, can integrate to send/receive documents.

4. **Easy routing and storage of electronic fax documents.** The ideal fax solution would provide several options for routing inbound faxes (to users, groups of users, network folders, MFP devices, by document content, etc.) with notifications and an audit trail available for every document touchpoint. Also, for long-term storage, a fax archiving option should be available to offload and store documents for as long as required.
5. **Security, privacy and compliance.** An on-premises fax server solution should help with compliance initiatives by providing a secure solution for managing all fax documents. The solution must offer various features and capabilities that help organizations achieve privacy and security standards.
6. **Business continuity/disaster recovery.** Identify an enterprise fax solution that deploys in high-availability scenarios. Also, look for a solution that provides disaster recovery options over multiple site locations.
7. **Ease of administration and administrative tools.** The administration and management of the system is key to the success of any fax server implementation. Choose a fax server that provides comprehensive guides and tools to make the administration of the fax server as efficient as possible.
8. **Telephony compatibility.** Choose a solution that operates 100 percent in-house and/or as a hybrid solution. Ensure that the fax server software is compatible with telephony equipment, if applicable.

The following sections will breakdown these categories and provide insight into the types of features and capabilities companies should expect from an enterprise grade fax server application.

1. What is the business need?

Many organizations begin a quest to implement a fax server based on a business need that is driving the project. Understanding this business need is important in evaluating the capabilities needed in a fax server. Also, it is key to know **how** fax is used when choosing the best fax server for an organization. Here are some questions to consider:

- Is there a business process or workflow involving fax that can be more efficient with a fax server? Tip: Identify the workflow/business process and the line of business owner/stakeholder.
- Has the line of business owner/stakeholder mapped how fax documents flow in and out of this business process or workflow? Tip: Interview the line of business owner/stakeholder to see how the process currently works and how it would ideally look with a fax server implementation. Map out the flow of fax documents (inbound and outbound) to see where efficiency, productivity and cost savings can be gained.
- What types of applications need to be integrated with fax? Tip: Make a list of all the back-end applications that are part of a workflow or business process for fax (ERP, CRM, document management, etc.) and any vertical application systems (software specifically developed for healthcare, legal, financial, etc.). Do users need to fax from applications such as Microsoft Office? Does fax need to be integrated with an existing email application? The more comprehensive the list, the better prepared you will be to evaluate fax server capabilities.

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2. Electronic faxes from desktop, email and MFPs

Companies that rely on paper-based faxing with fax machines know how time-consuming, costly and frustrating it can be. A fax server turns formerly paper-based faxing (with a fax machine) into electronic-based faxing (with a fax server). It essentially takes the "paper" out of faxing, whenever possible. A fax server can integrate with a variety of desktop environments and email systems so that an employee can send and receive fax documents directly from a computer, without ever touching a fax machine. Worker efficiency is greatly improved as faxes can be managed directly from familiar system interfaces to reduce learning times. The various options are outlined below.

Desktop: Fax directly from Microsoft® Windows®

- **Print to fax:** Send a fax from any Windows-based application, such as Microsoft Office. Select "File" then "Print." This allows a user to select the fax server, same as choosing a network printer.
- **Send to fax:** While exploring in Windows, such as a folder, simply "right-click" a file and select "send to fax."
- **Windows tray icon:** Open a Windows tray icon to send quick faxes, broadcast faxes or link to external phone books to streamline sending.

Desktop: Fax using dedicated fax software interface

- **Windows client.** A fax server should include an option to install a desktop application exclusively for managing fax documents. This desktop client is used to create, send, receive, route and forward faxes. For users who require more control over faxing or for mission-critical processes, choose a fax server that offers a fully-featured fax application that has the look and feel of an email system, including an inbox for its users or groups.
- **Web client application.** Alternatively, seek a fax server that offers a fully-featured workflow tool that allows end users and administrators to access the server remotely from a web browser via the internet. Make sure that the web client application is compatible with the web browser (Internet Explorer®, Chrome™, Firefox®, Safari®, etc.) and operating systems (Windows, Mac®, etc.) that users utilize.

Email integrations

- One of the greatest efficiency gains for fax server users is the ability to send, receive and manage faxes within an existing email client. It is important to ensure that, at the very least, the fax server is compatible with any SMTP email server, such as Google Apps™, Microsoft® Office 365™, Microsoft® Exchange and IBM Notes®.
- For a richer experience within email clients, some fax server providers offer specific connectors for the most popular business email applications, such as Microsoft Exchange and IBM Lotus Notes. This connector enhances the faxing experience within these email clients, adding a "send a fax" button on toolbars and pre-populating fax forms for easy faxing from the email client.

Multi-function printer (MFP) integration

- MFP integrations are especially important if there is a paper document that needs to be faxed. By scanning the document on a connected MFP, the scanned copy becomes an electronic document that can then be sent via the fax server. The use of multi-function printers is growing, and organizations can significantly benefit from faxing with MFPs via a native or universal connection to the fax server. Ideal applications include scan-to-fax and auto-print upon receipt of a fax when paper-based processes are still required.
- Most fax servers connect to MFP devices via a universal SMTP connector. However, if MFP device printing is an important part of a workflow or business process, consider fax servers which provide a two-way, personalized experience at the MFP. This is achieved when the user logs into the device or swipes a badge for identification. The user then has access to personal fax coversheets, phonebooks, fax history, etc. It is a much richer experience for the user and keeps fax history in the personal faxing audit log.

3. Production (automatic) faxing and application integrations

Production (automatic) faxing. If an organization has identified a business process or workflow involving faxes that are generated "automatically" (typically without human involvement), this section is particularly important. Production, or automated, faxing is a term used to describe the means the application uses to send documents to the fax server, which then delivers the documents reliably as faxes, secure email or both. A fax server that has production fax capabilities should integrate seamlessly with the back-office applications (ECM, CRM, ERP, EMR/EHR, etc.) that produce batch-oriented documents. As a result, the fax server ingests the document from the back-office system, creates and formats the documents and then delivers them as individual faxes, complete with notifications of delivery status and a traceable audit trail.

Seek a solution that offers tools to receive data from network folders or print streams of large batch jobs (invoices and purchase orders, for example) and can reliably send them to unique recipients—fully unattended and automated. A production fax solution should have the ability to create automated notifications detailing the progress of each production fax batch job and, more importantly, each document within the group.

Most fax servers will integrate with virtually all back-office applications with integration tools, modules and APIs, including those that support embedded scripting command languages, XML, JAVA and COM. However, some fax servers offer pre-built, certified integrations to applications such as SAP® and Oracle®.

- Certified connector for SAP. Create, send and receive faxes from SAP.
  - **Fax cover sheets.** Either SAP or the fax server can automatically generate fax cover sheets.
  - **Batch faxing.** Organizations can submit faxes to be grouped into a batch and sent later at a prescheduled time.
  - **Dialing rules.** Configure special dialing rules that can modify outgoing fax numbers above and beyond the SAP "exception rules."
  - **SAPscript.** The ability to recognize several special SAPscript codes that allow users to add fax control commands to output forms (cover sheet information, attach library documents, specify delivery and notification instructions and more).

- **Connectors for Oracle.** Create, send and receive faxes from Oracle® E-Business Suite foundation and in Oracle 9i applications.
- **Support the following Oracle document types:** Postscript, PCL, PDF, ASCII, XML.

Application integrations. There is a second subset of integrations known as application integrations, such as fax servers interoperating with Enterprise Content Management (ECM) systems. This can be thought of as production fax in reverse. They are similar, however, in that both are considered automated application integrations—meaning the workflows, whether inbound or outbound related, are both unattended by personnel and thus fully automated.

Fax servers should offer specific integrations to the most popular systems. Alternatively, fax servers should provide a comprehensive set of custom integration tools to build integrations ad hoc. Inbound fax documents and associated metadata can be delivered outside of the fax server where a multitude of applications can access these documents and metadata.

Preferably, a fax server would have **pre-built integrations** for leading document management applications to send existing documents, create a new document as a fax and drag and drop a document into the explorer view of the fax library. Search for fax servers with pre-built ECM integrations for:

- Microsoft SharePoint®
- IBM FileNet®
- OpenText™ eDOCS
- OpenText™ Content Server

And finally, many organizations have built custom integrations for its in-house applications to interface with its fax servers. Most fax server providers offer a complete suite of integration tools, such as APIs, SDKs and command languages, to get the job done efficiently. Custom integrations require that a fax server offer a suite of tools, including XML, JAVA, COM and advanced web services.

4. Easy routing and storage of electronic fax documents

A network fax server can be set up to receive inbound faxes and apply routing rules based on the fax's content. A fax server can serve as an on ramp to a workflow process, an index and storage application or a routing mechanism to direct documents to the final destination within an organization. Organizations should evaluate workflow/business process requirements against the capture routing and storage features of a given fax server.

Easy routing of electronic fax documents

There are three basic types of inbound routing:

1. **Routing based on phone number dialed, such as DID/DNIS.** Administrators can set up rules to automatically use the telephony information associated with the inbound fax for routing purposes and more. The types of telephony data include:

- **Direct Inward Dialing (DID) and Dialed Number Identification Service (DNIS).** The fax number dialed will be unique and represent the recipient's fax inbox. A fax server can support as many fax numbers for as unique inboxes are needed.
- **Dual-Tone Multiple-Frequency (DTMF).** A method of using "touch tones" to route faxes or prompt senders who call you.

- **Automated Number Identification (ANI).** Capture the inbound calling phone number. It can be used to compare to a list to determine which rules to apply.
- **Call Subscriber Identification (CSID).** A string that identifies a fax as a recipient and helps to confirm that the fax is being sent to the correct recipient.
- **Channel routing.** Route an incoming fax to a user or group mailbox, depending on which fax channel the call was received on.

2. **Inbound routing options.** Inbound faxes can be routed based on customizable rules. These routing options are designed to get the faxed documents where they need to go quickly and efficiently. Routing options include sending faxes to:

- An individual user's fax inbox or integrated email inbox.
- All inboxes for members of a group. Many fax server solutions can provide systematic distribution of faxes to groups of users either linearly (to user one, two, three, etc.) or in a Round Robin workflow (to the next available inbox).
- A network folder.
- Back-end workflow systems and other business applications.
- Vertical applications.
- Content management systems.
- Storage systems.
- MFP devices. A fax solution should have a setting for received faxes that allow for inbound faxes to be automatically printed upon receipt.

3. **Routing based on fax content.** Some fax servers can search the content of an incoming fax and route it based on its recognized characters. This is particularly important to those industries that use account numbers, barcodes or other identifying fields in fax content.

- **Optical/Intelligent Character Recognition (OCR/ICR).** Seek an enterprise fax solution that has OCR processors available. Convert images of text in received faxes into standard, editable text files.
- **Barcode recognition and routing.** Route faxes based on barcode data. Barcode information is included in the fax history record and routes based on routing rules. Supports 1D and 2D barcodes.
- **XML export.** A process by which the fax server application outputs fax image files and metadata in XML format. These can be imported into an XML-compatible document management system, Microsoft SharePoint, etc.

Easy storage of electronic fax documents

A faxing system should enable fax archiving to allow for easy storage and retrieval of fax documents. These features should:

- Record all inbound and outbound fax transactions and provide searchable access.
- Archive automatically without the suspension of operations.
- Export faxes and metadata to third-party archiving or content management systems.
- Include searchable PDF capabilities if there is a need to create text searchable versions of inbound faxes. This feature is important to companies that need to store or archive faxes with searchable content from keywords and text strings. Search fax history as easily as typing a keyword search string to find related faxes.

Also, select a fax server that includes optional automatic archive capabilities, such as security and encryption, compliance and audit readiness, and a comprehensive search and retrieval engine.

5. Security, privacy and compliance

Organizations today face a multitude of compliance directives and thus investments in a fax solution must be able to demonstrate tangible capabilities that contribute to the security and privacy of faxes and associated data. Many businesses that rely on fax turn to fax servers to provide top-notch security and privacy.

Faxing, by its nature, is reasonably secure. The point-to-point transmission of a fax over a secure PSTN is highly resistant to tampering, interception, viruses or malware. But there are other security advantages of a fax server, such as automating paper-intensive delivery processes to eliminate paper handling and reduce opportunities for unauthorized viewing of fax content. Organizations can also eliminate inefficient manual routing that could breach security and privacy guidelines.

Many fax servers offer other forms of delivery, which increase the security of transmission, such as secure email, certified delivery and encrypted PDF delivery.

Specific security features to look for in a fax server are plenty. Look for a faxing solution that allows multiple servers on the same network to communicate directly with each other through least-cost routing to eliminate telephony charges. This will allow for high speed encrypted faxing between network fax servers and bypasses phone lines or dedicated FoIP connections. A fax solution should be able to encrypt fax images that reside in the images folder/fax database, if required. Customizable outbound dialing rules can gain precise control of outbound faxing by specifying rules and restrictions over how faxes are sent. Make sure that a fax server has secure SMTP options to support off-premises email solutions and provides authenticated, secure, encrypted connections (TLS and SSL).

Other security options are available for ensuring the content being sent is approved for transmission. Many organizations have strict regulations regarding the type of content that can be transmitted. A fax server should provide the ability to require approvals prior to sending, e.g., someone who reviews the electronic document and provides approval prior to transmission. This approval system can be in place for any type of content: contracts, RFP/RFQs, invoices, legal notifications, etc., and is designed to be an internal fail-safe for organizations trading confidential or sensitive content.

6. Business continuity/disaster recovery

Interruptions can occur at various layers of the fax server system. These business disruptions can be planned or unplanned, such as telephone equipment failures, network server failures or reboots, communication outages, electric power interruptions or even a software application failure. To mitigate this, it is important to devise a fax server implementation that can be redundant at every necessary layer. It is important to determine the business continuity strategy in the event of an unplanned disaster or planned outage.

The more critical fax is to a business, the more important business continuity is to the implementation. Review architecture and business continuity plans with the experts of the fax server company for recommendations on architecture and failover options.

Here is a short list of deployment scenarios that can provide business continuity in the event of a planned or unplanned outage:

- **Shared database for high availability.** A fax server that can load balance and share its internal services and images for high-availability. This is a scenario in which a fax server shares its database of users, groups, printers, etc. It also shares various server services and fax images across a network. The fax server database resources are shared such that the application provides a centralized location for all company users, groups and other data objects.
- **Cold spare.** A cold spare configuration is intended for use in the event of a long-term system shut down, a failure or any other system interruption that may take more time to repair.
- **Active-passive cluster.** In the event of a primary fax server failure, the business reverts to the secondary server to continue fax processing. Cluster environments protect against an application/service failure, system/hardware failure, site failure and downtime due to planned maintenance.
- **Virtualization.** Among the many benefits of virtualization is the ability to consolidate multiple physical machines onto a single traditional server and do so in a remarkably expeditious fashion. The net result equals a significant reduction in expenditures, with less hardware and energy costs, and a new centralized point of administration that streamlines server management and increases the agility and efficiency of IT organization.

7. Ease of administration and administration tools

Key to the success of any fax server implementation is the administration and management of the system. Choose a fax server which provides comprehensive guides and tools to make the administration of the fax server as successful as possible.

Some things to look for in a fax server provider include:

- **Enterprise administration tools.** These tools are designed to ease the burden of managing the fax server and provide platforms to easily manage updates and activities.
  - **Enterprise management.** Seek a solution that allows administrators the ability to manage all fax servers on the network from a single client application. Managing users, groups, forms, coversheets, billing codes, printers, signatures and frequently used documents, among other key functions, is a must.
  - **Reporting tools.** A fax server must include a variety of system reports that users or administrators can generate by schedule or ad hoc. Useful reports include server analysis, inbound or outbound fax, fax printing, volume, viewed/unviewed, channel utilization and many others.
  - **Administrative tools.** A fax server should include a comprehensive set of utilities for managing all aspects of the fax database. These include server diagnostics, database backups, fax aging, fax purging and many more. A web edition of the administration utility should be available, or the tool should be web-based to allow for remote access.
  - **Robust synchronization capabilities.** Fax servers typically maintain a database of users and user-specific information, such as permissions, preferences, log in information, etc. Look for various ways to interface and synchronize the fax server data with company phone books and directories.
  - **Active directory, ODBC and LDAP-compliant data sources support.** Support for latest OSs and productivity software. Ensure that the fax solution meets requirements to support the latest editions.

Analytics capabilities

With the global reach of modern businesses, the need for analytics has never been greater. Applying analytics to enterprise faxing delivers on this front and allows for the visualization of the data and trends required to improve efficiencies and profitability.

Easy access to meaningful data enables quick evaluation of the state of messaging activity, allowing users to:

- Monitor and investigate messaging activity for mission critical applications.
- Understand enterprise use and trends for faxing.
- Identify and react to messaging bottlenecks.
- Observe and respond to unacceptable message delivery rates.

8. Telephony compatibility

The final consideration in choosing a fax server is telephony compatibility. Depending on existing telephony infrastructure, users may choose to connect via TDM, fax over IP (in VoIP environments), SIP trunk or by converting fax traffic with a media gateway.

Consider these options, depending on existing infrastructure:

- **Support for intelligent fax boards.** Support for TDM (analog, DID, BRI, T1/PRI, E1/PRI).
  - The fax server should natively support the latest Dialogic® Brooktrout® TruFax® and TR1034 products in scalable densities.
- **Support for software-based fax over IP (FoIP).**
  - Supports Dialogic SR140 FoIP middleware.
  - Supports T.38, T.37, H.323 and SIP.
- **SIP trunking.** SIP trunking vendors, such as AT&T®, babyTEL, CenturyLink®, Level 3®, Verizon and XO® Communications, should be supported.
- **UC/UM equipment compatibility.** Integrates seamlessly with UM/UC systems, including Voice over IP (VoIP) networks. Review interoperability guides to ensure interoperability with UM/UC or VoIP networks.
- **Media gateway support.** Choose a media gateway vendor that supports integration to the fax server.
- **Cloud/outsourced telephony.** Choose a fax server that can seamlessly interconnect to a cloud-based telephony solution, which is a hybrid deployment of on-premises fax server and cloud-based telephony. For the best service and continuity with software, choose a cloud provider that is offered by the fax server company and not a third-party cloud provider.

This last option, the hybrid deployment, is becoming more and more popular. It transmits faxes via the cloud. This is considered a hybrid option because it is a single deployment that uses an on-premises fax server with cloud fax services to send and receive faxes. It completely removes the burden of connecting, troubleshooting, maintaining and managing the connection of the fax server to on-premises telephony by outsourcing the telephony connection to the cloud. This implementation typically provides unlimited capacity and built-in failover/redundancy of connectivity.

However, a second type of hybrid deployment uses both cloud-based transmission and a fax server connected to in-house telephony. Some companies elect to connect its fax server by combining on-premises and cloud-based telephony. This implementation allows complete failover and redundancy of fax transmission capabilities for a fax server. It can easily accommodate spikes in fax traffic by using the cloud's unlimited capacity to handle large volumes and eliminate congestion over in-house telephony.

OpenText will help find the right solution for your organization

OpenText offers a wide range of fax solutions to meet the needs of any organization. Because OpenText™ RightFax™ offers hundreds of feature settings for users, groups, process automation and more, the total sum of choices can be staggering. OpenText provides expert advice and guidance regarding solutions, and will take the time to understand your current environment, requirements and needs. Reach out to any one of our extensive network of partners that sell OpenText products to help you choose the right solution.

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